Construction Sequencing

In sequenced construction, sites are completed in stages and completed portions are permanently stabilized before other areas are disturbed

Description
Construction sequencing requires creating and following a work schedule that balances the timing of land disturbance activities and the installation of measures to control erosion and sedimentation, in order to reduce on-site erosion and off-site sedimentation.

Applicability
Construction sequencing can be used to plan earthwork and erosion and sediment control (ESC) activities at sites where land disturbances might affect water quality in a receiving waterbody.

Siting and Design Considerations
Construction sequencing schedules should, at a minimum, include the following: The ESC practices that are to be installed

- Principal development activities
- Which measures should be installed before other activities are started
- Compatibility with the general contract construction schedule

Table 1 summarizes other important scheduling considerations in addition to those listed above.
Table 1. Scheduling considerations for construction activities.

Construction Activity	Schedule Consideration
Construction access, entrance to site, construction routes, areas designated for equipment parking	This is the first land-disturbing activity. As soon as construction begins, stabilize any bare areas with gravel and temporary vegetation.
Sediment traps and barriers, basin traps, sediment fences, outlet protection	After construction site is accessed, principal basins should be installed, with the addition of more traps and barriers as needed during grading.
Runoff control, diversions, perimeter dikes, water bars, outlet protection	Key practices should be installed after the installation of principal sediment traps and before land grading. Additional runoff control measures may be installed during grading.
Runoff conveyance system, stabilize stream banks, storm drains, channels, inlet and outlet protection, slope drains	If necessary, stabilize stream banks as soon as possible, and install principal runoff conveyance system with runoff control measures. The remainder of the systems may be installed after grading.
Land clearing and grading, site preparation (cutting, filling, and grading, sediment traps, barriers, diversions, drains, surface roughening)	Implement major clearing and grading after installation of principal sediment and key runoff-control measures, and install additional control measures as grading continues. Clear borrow and disposal areas as needed, and mark trees and buffer areas for preservation.
Surface stabilization, temporary and permanent seeding, mulching, sodding, riprap	Temporary or permanent stabilizing measures should be applied immediately to any disturbed areas where work has been either completed or delayed.
Building construction, buildings, utilities, paving	During construction, install any erosion and sedimentation control measures that are needed.
Landscaping and final stabilization, topsoiling, trees and shrubs, permanent seeding, mulching, sodding, riprap	This is the last construction phase. Stabilize all open areas, including borrow and spoil areas, and remove and stabilize all temporary control measures.

Limitations
Weather and other unpredictable variables may affect construction sequence schedules. However, the proposed schedule and a protocol for making changes due to unforeseen problems should be plainly stated in the ESC plan.

Maintenance Considerations
The construction sequence should be followed throughout the project and the written plan should be modified before any changes in construction activities are executed. The plan can be updated if a site inspection indicates the need for additional erosion and sediment control.

Effectiveness
Construction sequencing can be an effective tool for erosion and sediment control because it ensures that management practices are installed where necessary and when appropriate. The plan must be followed and updated if needed to maximize the effectiveness of ESC under changing conditions.

Cost Considerations
Construction sequencing is a low-cost BMP because it requires a limited amount of a contractor's time to provide a written plan for the coordination of construction activities and management practices. Additional time might be needed to update the sequencing plan if the current plan is not providing sufficient ESC.